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In Spartanburg

Ice in Fuel Drain Apparent Crash Cause

Related Chart, P.3

Freezing temperatures and a small amount of water in an obscure fuel line drain apparently combined to cause the crash of a Cessna 150 at Spartanburg Downtown Airport which seriously injured a student and his instructor, Feb. 1.

It is believed a small amount of water settled in the lower fuselage drain (a small T fitting barely visible on the underside of the fuselage) and froze. When it froze, it appears the ice expanded upward into the fuel line constricting fuel flow to the carburetor, causing engine failure during a touch and go.

Up North, where winter sub-freezing temperatures are the rule, it is apparently common knowledge that ice can form in the drain, blocking the fuel line. But down South, many pilots are not even aware of the drain's existence and the potentially hazardous situation it can create.

Most 150 pilots are aware of the two wing drains and the sump drain inside the engine cowling which is the published low point of the fuel system. These are drained prior to flight. But very few know about the fourth underneath the fuselage which is the actual low point of the system.

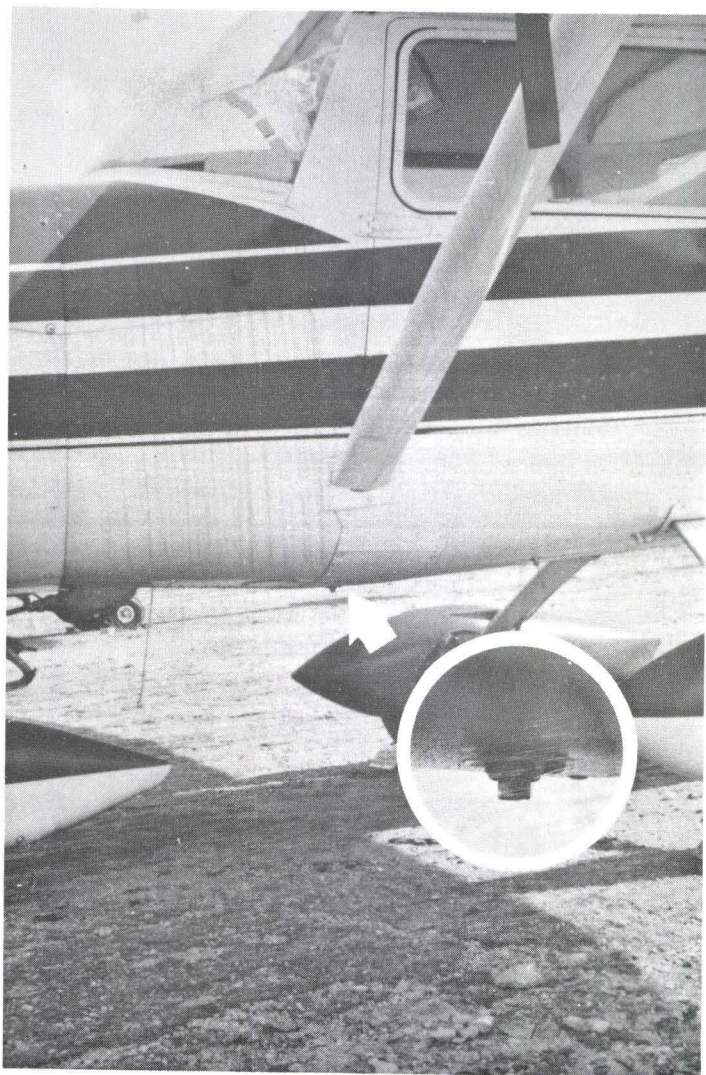
The drain is hard to see unless you get down on your hands and knees and look underneath the fuselage (see picture) and it requires a wrench to remove the plug to drain it. It is a requirement that it be drained during

100 hour and annual inspections.

Carolyn Pilaar, owner of the Cessna, questioned the purpose of the drain. "It doesn't make any sense to have a low-point drain that can't be drained during pre-flight," she said.

However, she said, the drain can be converted to a quick type drain and she recommended that

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**South Carolina Pilots Prefer
Sectional Aero Chart, Page 6**



PALMETTO AVIATION is an official publication of the South Carolina Aeronautics Commission. It is designed to inform members of the aviation community, and others interested in aviation, of local developments in aviation and aviation facilities and to keep readers abreast of national and international trends in aviation.

The Aeronautics Commission is a state agency created in 1935 by the S.C. General Assembly to foster and promote air commerce within the state.

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Ice in Cessna Fuel Drain Can Obstruct Fuel Flow

Continued from P. 1

be done. She has had this done on her two other 150's, she said.

Even if wing tanks have been thoroughly drained, there can be small amounts of water remaining in the tanks. Normally, any water will drop into the vertical part of the drain T as the fuel passes on its way to the carburetor; and this is what it should do. The small amount of water won't do any harm unless it freezes. Fuel, being lighter, will pass over any water in the drain without mixing. The problem comes when the water freezes. The resulting ice plug ex-

pands in the direction of least resistance which is upward into the main fuel flow passage, restricting fuel flow.

This restriction is only apparent when the engine is developing maximum power for takeoff and is demanding the full flow capabilities of the fuel system. The airplane will crank and taxi with no problem.

Before the flight, Ms. Pilaar said the wing tanks and sump on the aircraft was drained. The airplane flew from Greenville Downtown to Spartanburg Downtown Airport without incident. It made one takeoff on runway 29 at Spartanburg and was in the process of making another when the engine quit and the aircraft crashed. The temperature was 27 degrees F.

After the crash, approximately two ounces was drained from the right wing tank and about three ounces from the T-drain underneath the airplane.

Ms. Pilaar told investigators she had received a load of fuel which contained a lot of water. The airplane had been fueled with the same gas and gotten water in the system but it was thought it had all been removed. About a gallon of water was drained from the aircraft. The lower fuselage drain was drained one time.

The FAA's Maintenance Analysis Center at Oklahoma City has identified ice in the lower T drain as the cause of 10 accidents in Cessna 150's on a recent computer printout. A spokesman at the center said there are many others attributable to ice in the T fitting but because of a change in coding tables, they are unable to retrieve them.

Although the possibility of ice forming in the drain is remote in mild climates such as we have in South Carolina, the possibility exists nonetheless and the FAA wants pilots to be aware of the potential hazard in other 150's.

Pilots Need Info On Water in Fuel NTSB Says

The safety board has called on FAA to distribute among general aviation pilots information concerned with eliminating water from fuel.

The National Transportation Safety Board also wants FAA to "require all accident prevention specialists in FAA District Offices make elimination of water from fuel systems an item for special emphasis."

In addition, NTSB wants FAA to require Cessna to provide instructions for the detection and elimination of water from the fuel systems of high wing Cessna aircraft.

The board noted that during 1978 there were at least 19 accidents or incidents involving various models of high wing Cessna aircraft in which engine power was lost because of water in the fuel.

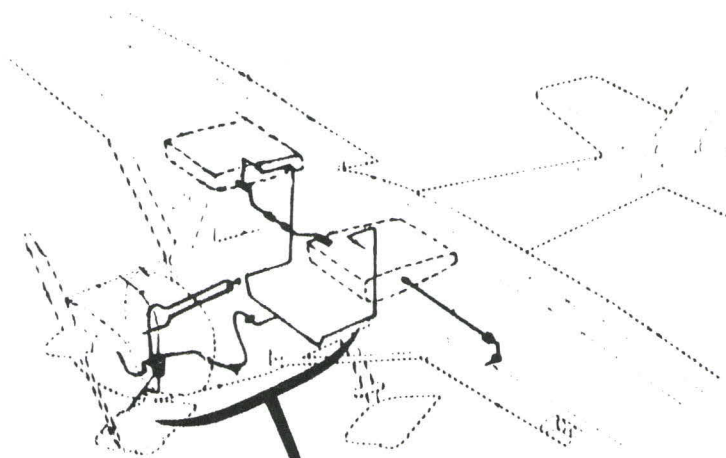
"Owner manuals for Cessna 150, 172, 182, 210 for model years from 1957 to 1977 were reviewed," NTSB said. "This review showed that there were inadequate instructions and descriptions as to the proper method of eliminating water from the fuel system.

DEPARTMENT OF TRANSPORTATION ACCIDENT PREVENTION PROGRAM

FEDERAL AVIATION ADMINISTRATION SOUTHWEST REGION



CESSNA MODEL 150 - FUEL LINE DRAIN TEE



In addition to the usual provisions for draining fuel and contaminants from the fuel cells, main fuel strainer, and carburetor, the C-150 has one other important fuel drain which apparently has been overlooked by both mechanics and pilots alike. This drain from a tee fitting at the low point in the fuel system between the fuel shut off valve and fuel strainer drain is a tube that extends through the bottom (exterior) of the fuselage where it is capped. Contrary to popular opinion, this tee is not completely flushed of water and other particles by draining the fuel strainer drain.



Investigation of a recent forced landing which resulted from engine failure at cruise disclosed that water which had accumulated in this tee had frozen and expanded to such an extent that fuel was restricted in the main fuel line. Investigation of two other C-150's belonging to the same operator revealed ice in the drain tees on both aircraft.

To prevent this condition, it is essential that owners and operators drain this tee periodically and also at any time it is suspected that there is water in the fuel system.

⁴Record Low Accident Rate Postd by G.A. in 1979

General aviation and air carriers had contrasting safety records, according to preliminary 1979 accident statistics from the National Transportation Safety Board (NTSB).

General Aviation--all non-air-line flying--registered lower totals across the board, and record low rates. Total accidents and fatal accidents decreased by as much as 17 percent. And both total and fatal accident rates, whether measured by flight hours or miles flown, were down by 7 to 18 percent.

General aviation recorded 4,238 total accidents, according to the preliminary 1979 statistics. This was a six percent decrease from 1978 and the lowest total in three years.

Women's Air Race To End in Columbia

The Hughes Airwest Air Race Classic, the women's air race which succeeded the famous Powder Puff Derby, will end in Columbia this year bringing women aviators from all over the nation to the Palmetto State.

The race will begin June 10 in Corpus Christi, Tex. and terminate in Columbia June 13. It will cover a distance of 2,433 miles with stops in Abilene, Tes.; Fort Smith, Ark.; Salina, Kan.; Waterloo, Iowa; Marion, Ill. and Huntington, W. Va.

The ARC is open to all licensed women pilots on payment of a \$10 initiation fee. Annual dues of \$5 entitles each member to an entry kit for the 1980 race. Entries close April 8. For further information, call Air Race Classic Ltd. Phone (214) 661-5499.

Fatal accidents decreased 17 percent to 658 last year for the lowest total in nine years in that category. The resulting 1,311 fatalities were the lowest general aviation death toll in the past nine years.

Accident exposure increased in 1979, as measured by both flight hours and by aircraft miles flown. The rate of 10.6 total accidents in every 100,000 hours flown was a seven percent decrease from 1978; the .84 total accident rate per million miles also was down by seven percent. The fatal accident rate in each 100,000 hours was 1.65; the same rate for every million miles was .130; each rate was an 18 percent decrease.

AIR CARRIERS had 33 total accidents in 1979 as compared with a record low of 24 in 1978. This 38 percent increase was the first rise in five years. Fatal accidents were unchanged at six, but fatalities more than doubled. Swollen by the 273 deaths in the American Airlines DC-10 crash at Chicago May 25, the 1979 toll was 353 as compared with 163 in 1978. Fatal accident rates were unchanged from 1978.

COMMUTER AIR CARRIERS registered unchanged or lower total and fatal accident rates. In passenger service, the commuter's rate of 1.51 total accidents in every 100,000 departures was down 16 percent from 1978. Their fatal accident rate of .49 on the same departure basis, was down six percent. Rates calculated by hours or miles flown ranged from unchanged to a decrease of 21 percent.

On the basis of passenger fatalities in every 100 million passenger miles flown, however, the rate historically applied to larger air carriers, the commuters showed an increase. This rate was 3.69--a 27 percent rise over 1978.

Aviation Calendar

MARCH 27: Greenville TEC auditorium, safety meeting, 7:30 p.m. "Descent to the MDA," "How to fly your HSI," and "preflighting avionics."

APRIL 15: Aiken Airport, safety meeting, 7:30 p.m.

APRIL 17: Myrtle Beach, FAA safety meeting--Santee Cooper Auditorium, 7:30 p.m.

APRIL 18: Columbia Airport, FAA safety meeting--Miller Aviation's new building, on the airport across from Tamper, 7:30 p.m.

APRIL 22: Camden, FAA Safety meeting--Kershaw Vocational Center, 7:30 p.m.

APRIL 24: Sumter TEC, FAA Safety meeting, 7:30 p.m.

APRIL 29: Greer, Pilot Education Clinic featuring Calvin Pitts of NASA's Ames Research Center. "A Funny Thing Happened On the Way To The Moon." At Stevens Beechcraft, 7:30 p.m.

APRIL 30: Charleston, Pilot Education Clinic featuring NASA's Calvin Pitts. "A Funny Thing Happened On The Way To The Moon." At Trident TEC, 7:30 p.m.

MAY: Aviation Month

MAY 17-18: Spartanburg Downtown Airport, EAA Foothills fly-in.

JUNE 10-13: Hughes Airwest Air Race Classic. Beginning in Corpus Christi, Tex., ending in Columbia.

JUNE 26: Greenville TEC, FAA Safety meeting, 7:30 p.m.

The pilot of this Cessna 210 landed without incident at Savannah recently, but he probably had about five years scared off his life after this full grown buzzard mated with his wing. The strike occurred at 2,000 feet at cruise flight halfway between Hilton Head and Savannah. The bird is estimated to weigh between 12 and 15 pounds and probably would have gone through the wing if it hadn't been for the metal spar. This graphically illustrates the need to keep a sharp eye out not only for airplanes but other flying objects as well.



Safety Meet Sets Record

FAA Accident prevention specialist Frank Kelley said pilots in the Greenville area set a record recently for attendance at a safety meeting held at Greenville TEC.

The TEC auditorium holds 275, but Kelley said, 310 people showed up. "They were sitting in the aisles and standing in the doorways," he said.

Fifteen people were presented the FAA's phase one flight proficiency wings, which Kelley said is something of a record. Don and Eleanor Sankey became the first husband and wife team in the state to qualify for the wings and Carolyn Pilaar became the first instructor to qualify for phase three instructor wings.

Others receiving the wings were: Mark A. Payne, Thomas W. Greene, Mary Ellen Castelleo, Vernon L. Lipe, Larry A. Mace, Frances B. Galloway, Paul Hughes

Jr., Ruth M. Stewart, Donald F. Coody, A. L. McCowen, Darren Carroll, Mike Garrett, Kent Smith and Wayne Buzby.

Attendance at an FAA sanctioned safety meeting meets one requirement for the wings. Other requirements are two hours of refresher flight training and an hour of instrument training in an aircraft or simulator.

Also, pilots who attend the seminars are eligible for the new sweepstakes program begun by the General Aviation Manufacturers Association. A drawing will be held at the end of the year and the winner will receive a \$50,000 airplane of his choice. Entry forms for the sweepstakes are given out at the safety meetings.

Greenville is planning a safety meeting every month now. The next is set for March 27 at the TEC auditorium.

FBO's Advised: Keep Camera Handy For Accidents

Judging from the experience gained by persons involved in accident prevention and investigation, airport managers would be well advised to have a good camera ready at all times to photograph any serious incident or accident occurring on the field.

Photos are much more reliable for accident investigation than eyewitness reports, expert testimony, or theory. It is axiomatic these days for all involved to point the accusing finger at someone else.

The permanent record that a photo provides should prove extremely valuable in protecting the airport in case of subsequent legal action; photos are also useful as an accident prevention training aid.



Chairman Speaks

South Carolina Aeronautics Commission Chairman Joseph Wilder speaks to participants at Clemson University during a conference on maximizing the state's Aviation Resources Feb. 21.

\$28.55 Million Allocated For Airport Development

Airport Development Aid Program (ADAP) allocations totalling \$28,545,327 for 72 development projects were approved by the Department of Transportation during the first quarter of fiscal year 1980.

The allocations by DOT's Federal Aviation Administration were made for airport improvements in 34 states and American Samoa. A total of \$8,393,187 was allocated for projects at 37 general aviation airports, and the remaining \$20,152,140 for improvements at 35 airports serving air carriers.

NTSB Gives Back Wings To Former Heart Patient

An airline pilot who had an open-heart surgery five years ago has been declared fit for duty again by the National Transportation Safety Board over the protest of FAA, which charged the action disregarded public safety.

The 51-year-old pilot of Frontier Airlines, James D. Schwartz, will soon start training for a Boeing 737.

In the years since he grounded himself and underwent surgery, he was working as a bricklayer, plane cleaner and airline mechanic, a report said.

Observers said this was the first time the board had taken such action in the case of an airline pilot who had open-heart surgery. NTSB apparently several times has overruled FAA in cases involving medical fitness.

Schwartz reportedly took his appeal to the safety board last spring under a statute that makes the board final arbiter in cases where FAA denies a pilot a medical certificate.

Two issues had to be decided, a safety board spokesman said. One was whether the pilot's acknowledged heart disease could be expected to lead to a heart attack. The second was whether the pilot was a risk for incapacitation.

The full five-member safety board upheld the ruling of law judge Jerrell R. Davis.

A legal dispute between the two federal agencies centers on the degree to which the safety board should weigh the contradictory medical opinions of medical experts.

Responses Show Pilots Prefer Sectional Chart

South Carolina pilots apparently prefer the Sectional Scale on the State Aeronautical chart, according to the responses we received to our survey.

About 183 pilots responded to our questionnaire printed in the January and February newsletter and, of that number, 106 said they preferred the sectional and 66 liked the WAC scale. Seven pilots said they wanted both and two said neither and one said either.

Most of you who responded also took the time to add some comments which we appreciate. Many of these were thoughtful suggestions which we will consider.

At its monthly meeting March 19, the Commission voted to continue publishing the Sectional Chart, in accordance with the wishes of the majority of those pilots which responded to our Survey.

Again, for those who took the trouble to respond, thanks for your input.



Breakfast Club



Mar. 30 - Greenwood Lake, Blazer Restaurant

Apr. 13 - Cypress Bay Airport, Little River Lunch in Hanger.

Apr. 27 - Camden

Weather-Check At Va. Airport Gets FAA OK

The Shenandoah Valley Airport, in Staunton, Va., is the first airport in the country to have an automatic weather reporting system installed and approved, according to the FAA.

The new system is called "Weather Check", and was developed by Artais, Inc. of Columbus, Ohio. The system consists of sensors that measure barometric pressure, temperature, dewpoint, density altitude, and wind speed and direction. The sensors are linked to a processor and an automatic voice system that broadcasts once a minute over the nearby Staut Beacon. NOTAMS and other local air traffic messages can also be included in the broadcasts.

In addition, Artais, in conjunction with the FAA and the U.S. Air Force is evaluating several low cost visibility sensors for add-on to the system. The system can also be accessed by telephone.

The Weather-Check system is eligible for funding under the Airport Development Aid Program (ADAP). Virginia state aviation director Willard Plentl said the state has purchased the installed model of Weather-Check and has ordered two more systems.

FAA administrator Langhorne Bond approved the design and engineering of the installed model August, 1979. The final flight check by the FAA was completed Jan. 23, 1980.

According to FAA Eastern Region Director Murray E. Smith, this is the first such system to be fully approved by the FAA. It will enable pilots to use the airport, under certain instrument conditions, when there are no ground personnel on duty.

FOR SALE



1966 Beech Muskeeter 150 Formerly Owned by The Citadel Flying Club

2,368 hours total time, 1,000 hours since major, annual inspection, April, 1978. Equipped with KX 170B Nav Com, Narco Com 10, dual VOR's, glide slope, localizer, KT 78 Transponder, Bendix ADF-T12D and KMA 20 audio panel. 150 HP Lycoming engine, model 0-320-E2C, serial no. L-16870-27A. Senseinch propeller model M74DM-0-58.

The aircraft will be sold by the state of South Carolina at public auction 11 a.m. April 15, 1980 at the S.C. Aeronautics Commission, Columbia Metropolitan Airport, West Columbia, S.C. The property will be sold "as is, where is" at the point shown. No guarantee of its description, condition or value is given and those bidding are expected to examine the property and determine for themselves the information they desire concerning it.

The removal of the property and expenses of removal will be the responsibility of the successful bidder. Property must be removed within ten days of notice of award.

The aircraft may be inspected at the Aeronautics Commission Monday through Friday, 9 a.m. to 4 p.m. For further information, contact Bill Goodwin, (803) 758-8036.



SOUTH CAROLINA AERONAUTICS COMMISSION

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Miller's New Building

Miller aviation will soon move into this new building at Columbia Airport. The building is located next to Runway 5/23 off S.C. 215.

AOPA Handbook Now Available

The Aircraft Owners and Pilots Association's (AOPA) 1980 Handbook for Pilots is now being distributed and the association says a new format gives added information over past issues as well as currently updated reference material.

The new format condenses eight sections into six and a more detailed contents listing and revised index makes it easier to find information, the association claims.

Added features include an extensively updated list of flight service station numbers, now including the Pacific region, and new U.S. Customs regulations. Additions to the federal aviation regulations have been bracketed to help locate important changes quickly.

The pocket-sized aviation encyclopedia also incorporates an aviation calendar of major conventions and air shows and the flight plan form previously used has been replaced by a fill-in-the-blanks checklist format arranged in the order used by the FAA to record the information.

The handbook can be selected as one of three publications available this year as an AOPA membership benefit or may be purchased for \$6 by AOPA members or \$10 by non-members.